Classes and Special Member Functions Solutions

Copyright © James Raynard 2021

Special Member Functions

- Briefly describe the purpose of the special member functions:
- Constructor
  - Called after memory has been allocated for an object
  - Initializes the object's data members, using the arguments to the call
  - Can also be used to configure the object before use
- Copy constructor
  - Similar to constructor, but the initial values are taken from another object of the same class

Copyright © James Raynard 2021

Special Member Functions

- Assignment operator
  - Assigns an existing object's members, using values taken from another object of the same class
- Destructor
  - Performs any cleaning-up operations required before the object is destroyed

Copyright © James Raynard 2021

Test class

- Write down simple definitions of the special member functions for the following class

```
class Test {
  int i;
  string str;
public:
  ...
};
```

Copyright © James Raynard 2021

Constructor

```
// Initialize object from arguments
Test(int i, const string& str) : i(i), str(str) {
    // Allocate memory, connect to database, etc
}
```

Copyright © James Raynard 2021

Copy constructor

```
// Initialize object from another Test object
Test(const Test& other) : i(other.i), str(other.str) {
    // Configure object (if needed)
  }
```

Copyright © James Raynard 2021

Assignment Operator

```
// Assign object from another Test object
Test& operator =(const Test& other) {
    i = other.i;
    str = other.str;
    return *this;                    // Return assigned-to object
}
```

Copyright © James Raynard 2021

Destructor

```
// Prepare object to be released
~Test() {
    // Release allocated memory, close the connection to the database, etc
}
```

Copyright © James Raynard 2021